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Heavy Ion Fusion Gas Desorption Issues

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Accelerators for HIF have an economic incentive to fit beam tubes tightly to beams and to repetitively pulse at ~5Hz. This places them at risk from gas desorption runaway, and from electron clouds produced by secondary electrons and ionization of gas. We use a variety of charged particle diagnostics in quadrupole magnets and we measure the flux of electrons and gas evolved from a target, near grazing incidence. We are adding electron modules to the WARP beam-dynamics PIC code, with the goal of a self-consistent, experimentally-validated tool for predicting electron effects in positive-beam accelerators.